



Australian Bureau of Statistics

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SPOTLIGHT: ASSESSING VOLATILITY IN LABOUR FORCE STATISTICS

Labour Force statistics are used to inform a broad range of important decisions across Australia. It is therefore reasonable for users of the information to seek to understand the extent to which changes in indicators reflect increasing or decreasing measurement volatility, particularly if they encounter a particularly large month-to-month movement. This is something that the Australian Bureau of Statistics (ABS) assesses each month, and also periodically undertakes more detailed analysis into. The latest results of this analysis are summarised in this spotlight.

Sources of volatility

Labour Force estimates are based on a household sample survey (rather than asking the questions from everyone in the population each month), and as such there will always be an inherent and unavoidable amount of survey data variability. The ABS minimises this variability by surveying a very large sample (covering more than 50,000 people each month), maintaining a high response rate, and leaving dwellings in the sample for eight consecutive months.

It is also important to note that the labour market itself is very dynamic, with any net change in a headline labour market indicator usually reflecting considerable underlying changes. For instance, recent net changes in employment are based on more than 300,000 people entering employment and more than 300,000 people exiting employment in the reference month. It is therefore important that when the labour market becomes more (or less) dynamic that the key labour market indicators effectively reflect those changes, and that any related volatility is important to understanding changes in the labour market, the economy and society.

Assessment of volatility

While the ABS regularly investigates any large movements in its Labour Force statistics, it also periodically undertakes more extensive analysis. The ABS published the article *Assessing Volatility in the Labour Force Series* in July 2015 that presented the results of a volatility assessment for Labour Force statistics, using similar methods undertaken by StatsCanada.

This article provides an update to this analysis, including data up to May 2019. As with previous volatility assessments undertaken by the ABS, 12 month rolling windows, rather than individual month to month movements, were used to better assess how the level of volatility has changed over time.

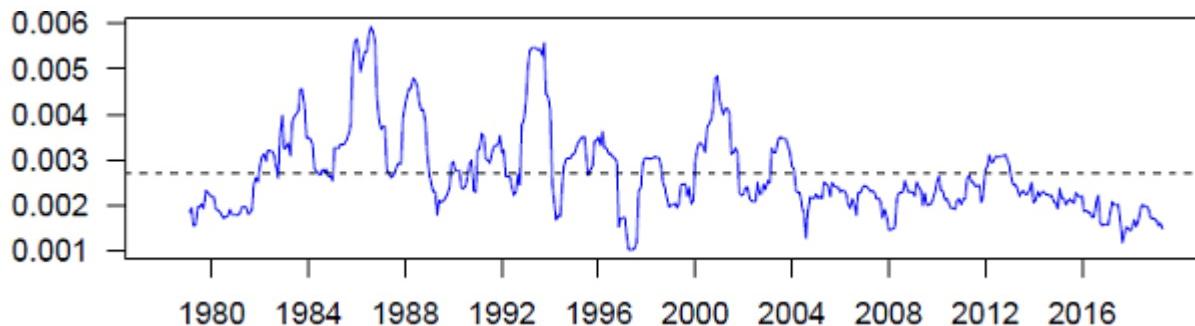
The latest volatility assessment examined the volatility within national seasonally adjusted estimates for employed persons, unemployed persons and the unemployment rate. The results show that the current level of volatility continues to be below historical averages.

Employed persons

Chart 1 below presents the 12-month rolling standard deviation of the seasonally adjusted growth rate in the number of employed persons in Australia (the method used to assess volatility). The dotted line represents the average standard deviation over the entire time series, back to

February 1978. A lower number represents less variability in the estimates, while a larger number represents higher variability. The solid line remaining below the dotted line demonstrates the lower level of volatility since 2004, which has trended down in recent years.

Chart 1: Rolling standard deviation, Employed Persons, Australian



The chart shows that the current levels of volatility for employed persons are below the series average since 2004, around 0.0021%, and lower than the average across the entire timeseries.

Unemployed persons and the unemployment rate

Chart 2 and Chart 3 show the volatility of unemployed persons and the unemployment rate respectively. The charts show that the volatility in these estimates has been below the long term average in recent years.

Chart 2: Rolling standard deviation, Unemployed Persons, Australian

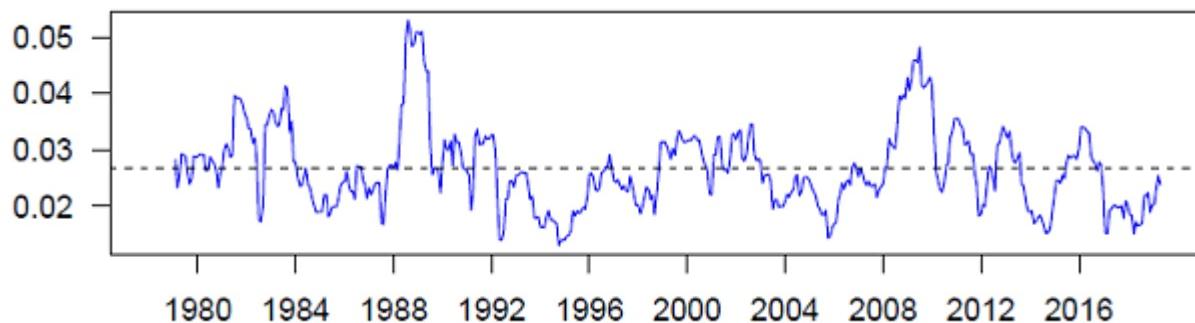
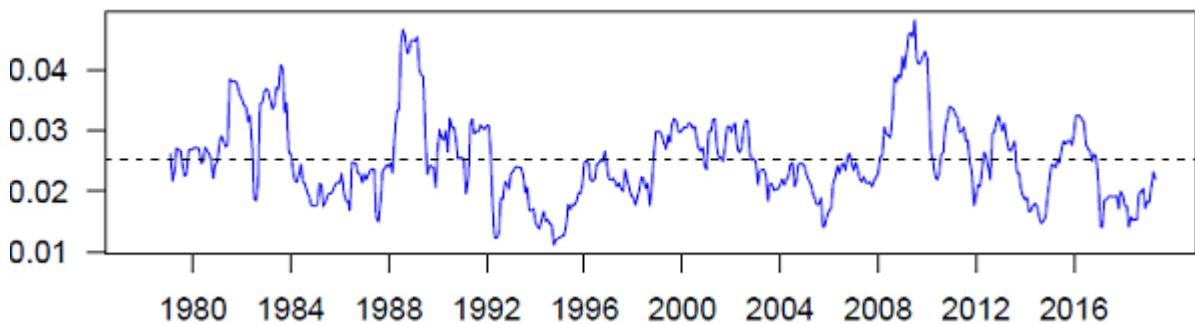


Chart 3: Rolling standard deviation, Unemployment Rate, Australian



Future methods enhancements

While this analysis demonstrates that the current level of volatility is below historical averages, the ABS will continue to work on developing methods to improve the quality and coherence of published labour market information, including methods to reduce the volatility that is inherent in sample based surveys.

For more information

If you have any questions about any of this analysis, please don't hesitate to contact us at labourforce@abs.gov.au.

Information on the other elements of the volatility assessment and their outcomes are also summarised in the below technical note.

TECHNICAL NOTE: ADDITIONAL INFORMATION ON THE ABS ASSESSMENT OF VOLATILITY

The volatility assessment included consideration of:

1. Variation in the month-to-month change in the seasonally adjusted series - the standard deviations of monthly changes in the series were produced for 12 month rolling windows.
2. The difference each month between the seasonally adjusted and trend series - the standard deviations of the percentage difference between the seasonally adjusted and trend estimates were produced for 12 month rolling windows.
3. The difference each month between the original and trend series - the standard deviations of the percentage difference between the original and trend estimates were produce for 12 month rolling windows.

In addition, an outlier analysis was conducted for each of these three measures of volatility by identifying extreme changes or observations that fall outside an approximate 95 per cent confidence interval. It is expected that this will occur approximately once a year for each of the series analysed (employed persons, unemployed persons and the unemployment rate).

The level of volatility was assessed at the national and state levels for the number of employed persons, the number of unemployed persons and the unemployment rate. (The details of which are in the full report). Across all of the measures of volatility assessed, the ABS has concluded that for national estimates in seasonally adjusted terms:

- for employed persons the current level of volatility has been below the historical average for more than a decade; and
- for unemployed persons and the unemployment rate, the levels of volatility have dropped below their respective historical averages over the last decade, following increased volatility around the time of the global financial crisis.

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